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ABSTRACT

School district personnel responsible for administering Title I programs recognize that for a student to take advantage of remediation the individual must be present for instruction. Many evaluations of Title I programs have attributed increased achievement to increased attendance, without explicitly investigating this assumed relationship. This paper describes a study which examined this assumption and discusses methodological implications for improving future evaluations of Title I programs. Although low correlations are shown between attendance rates and achievement, the assumption that attendance enhances achievement is supported. Nonetheless a break-even point probably exists such that more classroom time results in little additional achievement. It is thus important to determine what types of learning and instructional activities provide the basis for optional learning and subsequent achievement for educationally disadvantaged children. (Author/APM)

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# TITLE I ACHIEVEMENT AS RELATED TO PROGRAM AND SCHOOL ATTENDANCE

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ABSTRACT

School district personnel responsible for administering Title I programs recognize that for a student to take advantage of remediation the individual must be present for instruction. Many evaluations of Title I programs have attributed increased achievement to increased attendance, without explicitly investigating this assumed relationship. This paper examines this assumption and discusses implications for improving future evaluations of Title I programs.

AUTHOR'S NOTE

The authors would like to express their gratitude to Barbara Bessey of the American Institutes of Educational Research, Palo Alto, California, and Kim Yap of Northwest Regional Educational Laboratory, Portland, Oregon, for reviewing an earlier draft of the paper.

Since the enactment of the Elementary and Secondary Education Act in 1965, Title I funded programs have had to deal with a number of persistent problems, among them being student absenteeism, student mobility within the school district and dropouts.[1] Often, programs determined eligible for funding have been conceived and established to reduce chronic student absenteeism and/or dropout rates; thus, developing strategies to keep individuals in school or to attend school on a regular basis is of primary concern, and once accomplished, the potential for remediational activities to occur is considered established.

School districts determined eligible for funding on the basis of economic criteria have to deal with student absenteeism and/or the mobile student while trying to provide remediation to the educationally disadvantaged individual. Of primary concern to the local school district is establishing a compensatory program as well as implementing a process to identify eligible recipients. Attention to student mobility and absenteeism does not usually evolve until the problem surfaces during the course of a school year. Depending upon the severity of absenteeism, etc., resources are allocated where and when feasible in an attempt to alleviate these conditions.

In both situations it is recognized that the potential for remediation is limited if the students are not in school to take advantage of their regular classroom work as well as the supplementary program. This paper attempts to examine the relationship between school and program attendance relative to achievement for students served by Title I. This concern is founded upon a tenet assumed by many involved in compensatory programs but to date only studied in a tangential fashion. Program personnel believe that for an individual to take advantage of remediation,

the student must be present for instruction for learning to occur. Yet the Title I studies reviewed to date have not examined this assumed relationship between achievement and program or school attendance directly, vis a vis a careful re-examination of this assumption.[2]

The typical scenario depicts pre intervention attendance and achievement data treated separately, and compared with interim program attendance rates and post achievement. The intervention is usually a set of strategies designed to get eligible recipients to attend on a more frequent basis. Averages across groups of individuals relative to pre-post intervention are calculated and analyzed separately to detect changes in attendance rates and separately to detect changes in achievement. In some instances, control groups are established to make the experiment more rigorous, but analyses still reflect comparisons across attendance and achievement based upon averages for the groups, treating achievement and attendance, once again separately. Thus, if pre-post results favor increased attendance, in addition to pre-post achievement favoring increased achievement the program is declared a success (Balinsky, 1975; Grano, 1976).

Consequently, the assumption is made that increased attendance contributed to increased achievement for the groups compared. Yet the possibility that individual poor attenders could or would realize large achievement gains while regular attendees reflect no or modest gains remains unexamined. Averaging across groups prevents one from detecting these conditions as well as firmly associating achievement gains with individual attendance patterns. Consequently, the direct association between attendance and achievement remains tenuous. Notwithstanding, the assumed relationship between attendance and achievement is upheld as exhibited by the following criterion appearing in a list of student

selection criteria use by the district participating in the study; specifically, an individual students attendance record indicates that he or she shows promise of benefiting from the program.

## ANALYSIS AND RESULTS

To overcome the lack of sensitivity due to averaging as well as attempt to arrive at a clearer picture of the assumed relationship between attendance and achievement this study treated the student and not the program as the unit of analysis. All students in grades two through six in the Des Moines Public schools, Des Moines, Iowa, served by either the Title I mathematics or reading programs during the 1978-79 school year with pre/post achievement scores were included in the investigation. The 1978 edition of the Metropolitan Achievement Test, Form JS, of the survey battery (Primary I to Intermediate levels) was given on a pre/post basis. All students were tested on level (the level designated by the test publisher as being appropriate for a specific grade) and the derived scaled scores from the mathematics and reading subtest were used for analysis purposes. In addition to achievement data, extensive information on school and program attendance rates were collected. In all 93% of the students participating in the Title I reading program and 92% of students participating in the math program were included in this study. The remainder of the students were not included because of transferring out of the district, late entrance into the program, or no pre or posttest data.

Total school attendance for each student was divided by 179 (length of the school year) and transformed into a school attendance rate. Title I mathematics and reading attendance rates were calculated by dividing each students attendance by the total number of actual program days commencing with the day of initial service for the student at each

TABLE 1

Zero-order Correlations Between

Title I Attendance Rates and School Attendance Rates

| | Grade Level | | | | |
|---|---|---|---|---|---|
| Program | 2 | 3 | 4 | 5 | 6 |
| Math | .41** | .37** | .54** | .43** | .60** |
| | (N=137) | (N=121) | (N=174) | (N=109) | (N=103) |
| Reading | .40** | .36** | .63** | .40** | .47** |
| | (N=319) | (N=241) | (N=167) | (N=177) | (N=131) |

** Significant at $p < .01$.

of the participating schools. Table 1 displays the zero order correlations between Title I attendance and school attendance rates by program and grade level, while Table 2 contains descriptive information on attendance rates for program and school by grade level.

All correlations appearing in Table 1 are modest suggesting that 'high' school attendance rates do not necessarily insure high attendance for either the math or reading programs. This fact is clearly exhibited by the data presented in Table 2. This condition is due in part to the many scheduling problems occurring during the school day. Although a child may be present in school, field trips, building assemblies etc., compete for a student's time and subsequently reduce the amount of time spent in either remedial program.

TABLE 2

Descriptive Information on Attendance Rates

| | Title I Program | | | |
|---|---|---|---|---|
| | Mathematics | | Reading | |
| | Program Attendance | School Attendance | Program Attendance | School Attendance |
| Grade 2 | | | | |
| Range | .61 - .99 | .71 - .99 | .54 - .99 | .70 - .99 |
| | (.45 - 4.59)[a] | (.89 - 4.59) | (.16 - 4.59) | (.85 - 4.59) |
| Mean (SD) | .88 (.07) | .94 (.04) | .84 (.10) | .94 (.05) |
| Grade 3 | | | | |
| Range | .54 - .99 | .67 - .99 | .56 - .99 | .67 - .99 |
| | (.16 - 4.59) | (.71 - 4.59) | (.24 - 4.59) | (.71 - 4.59) |
| Mean (SD) | .86 (.09) | .93 (.06) | .85 (.10) | .94 (.05) |
| Grade 4 | | | | |
| Range | .54 - .99 | .76 - .99 | .54 - .99 | .74 - .99 |
| | (.16 - 4.59) | (1.15 - 4.59) | (.16 - 4.59) | (1.05 - 4.59) |
| Mean (SD) | .84 (.09) | .94 (.05) | .84 (.09) | .94 (.05) |
| Grade 5 | | | | |
| Range | .51 - .99 | .72 - .99 | .66 - .99 | .72 - .99 |
| | (.04 - 4.59) | (.94 - 4.59) | (.66 - 4.59) | (.94 - 4.59) |
| Mean (SD) | .82 (.09) | .94 (.05) | .86 (.08) | .94 (.04) |
| Grade 6 | | | | |
| Range | .56 - .99 | .74 - .99 | .64 - .99 | .73 - .99 |
| | (.24 - 4.59) | (1.05 - 4.59) | (.57 - 4.59) | (.99 - 4.59) |
| Mean (SD) | .80 (.09) | .92 (.06) | .85 (.08) | .94 (.05) |

a. Logit transformed attendance rate range.

Tables 3 and 4 display the first order semipartial (part) correlations (Kerlinger and Pedhazer, 1973, Bush et al., 1980), $r_{1(2.3)}$, between Title I program and school attendance rates respectively and achievement by program. Pre math and reading scores were partialed from the respective post test scores to adjust for varying entry level achievement status. All correlations reported in Tables 3 and 4 are low or at zero.

Prior to proceeding it is noted that the program and school attendance rates appearing in Table 2 range from .51 to .99. Because of this range restriction the effect of attenuation (reduction) of the correlation coefficients calculated necessitated examination to insure the stability of results of all reported semipartial coefficients. The possible effects due to this artifact were investigated in two different manners. First, attendance rates in both the reading and math Title I programs were transformed into hours of attendance, while school attendance rates were transformed into hours of classroom attendance for both reading and math instruction. Secondly, attendance rates for both Title I programs and school attendance were transformed into logits[3] (Snedecor and Cockran, 1967).

In both cases the ranges for attendance expanded considerably with the logit transformation providing the greatest expansion. Although fluctuations resulted, the overall trend in the magnitude of the coefficients reported in this paper (low or near zero) was substantiated. It is also noted at this juncture that although significance levels are reported for all correlations the major concern is the magnitude of the coefficient and not its statistical significance.

Surprisingly, several of the correlations reported in Table 4 are negative suggesting higher school attendance rates are associated with

TABLE 3

First-order Part Correlations Between Title I Attendance Rates and Posttest Scores Adjusted for Pretest Scores

| | Grade Level | | | | |
|---|---|---|---|---|---|
| Program | 2 | 3 | 4 | 5 | 6 |
| Math | .24** | .09** | .04** | .10** | .25** |
| | (N=137) | (N=121) | (N=174) | (N=109) | (N=103) |
| Reading | .10** | .06** | .10** | .15** | .03** |
| | (N=319) | (N=241) | (N=167) | (N=177) | (N=131) |

** Significant at $p < .01$.

TABLE 4

First-order Part Correlations Between School Attendance Rates and Posttest Scores Adjusted for Pretest Scores

| | Grade Level | | | | |
|---|---|---|---|---|---|
| Program | 2 | 3 | 4 | 5 | 6 |
| Math | .09** | -.07** | .11** | .03** | .07** |
| | (N=137) | (N=121) | (N=174) | (N=109) | (N=103) |
| Reading | .00 | -.07** | .17** | -.03** | -.15** |
| | (N=319) | (N=241) | (N=167) | (N=177) | (N=131) |

** Significant at $p < .01$.

low achievement in reading or math and vice versa. Since, as reported in Table 1, there exist modest correlations between program and school attendance, a more sensitive measure between attendance and achievement can be created by partialing out Title I and school attendance along with pre test scores from the appropriate post test results. This procedure was undertaken to model the current Title I regulations regarding remedial programs; i.e. to supplement and not supplant the existing schools programs. Consequently, by partialing out the respective pre test score to adjust for variable entry level achievement, in addition to, the appropriate attendance rate, a clearer picture of the relationship between school vs program attendance and achievement can emerge. Tables 5 and 6 display the second order part correlations, $r_{1(2.34)}$, between the appropriate attendance rates.

Once again all correlations appearing in Tables 5 and 6 are low or at zero, although the part correlations in Table 5 between program attendance and adjusted posttest score are somewhat higher, by grade, then those appearing in Table 6. However, in neither case does the relationship appear strong.

## DISCUSSION

Because of the very low correlations found between the respective attendance rates and achievement is the assumption that attendance enhances achievement supported? We would say yes. While children must be present to take advantage of both the regular school program as well as the additional educational benefits provided by the remedial program, apparently a break even point exists such that more time results in little additional achievement. A rephrasing of the assumption in terms of a research question (implicitly recognizing the importance of attendance) seems appropriate:

TABLE 5

Second-order Part Correlations Between Title I Attendance and Posttest Scores Adjusted for Pretest Scores and School Attendance

| | Grade Level | | | | |
|---|---|---|---|---|---|
| Program | 2 | 3 | 4 | 5 | 6 |
| Math | .22** | .07 | .02 | .08* | .22** |
| | (N=137) | (N=121) | (N=174) | (N=109) | (N=103) |
| Reading | .10** | .09** | .00 | .15** | .07 |
| | (N=319) | (N=241) | (N=167) | (N=177) | (N=131) |

* Significant at p <.05.

** Significant at p <.01.

TABLE 6

Second-order Part Correlations Between School Attendance Rates and Posttest Scores Adjusted for Pretest Scores and Title I Attendance

| | Grade Level | | | | |
|---|---|---|---|---|---|
| Program | 2 | 3 | 4 | 5 | 6 |
| Math | .02 | .01 | .09* | .05 | .09 |
| | (N=137) | (N=121) | (N=174) | (N=109) | (N=103) |
| Reading | .03 | .09** | .10* | .08** | .15** |
| | (N=319) | (N=241) | (N=167) | (N=177) | (N=131) |

* Significant at p <.05.

** Significant at p <.01.

"What types of learning and instructional activities provide the basis for optimal learning and subsequent achievement for educationally disadvantaged children after the basic 'opportunity time to learn' has been met?"

Thus time, measured grossly in terms of attendance, or actual available time for instruction and/or remediation is superseded by finer measures of learning and teaching activities suggested by the current wave of "time on task" studies (Stallings, 1980; Denham and Lieberman, 1980; Harnischfeger and Wiley, 1978). For example, Stallings (1980) reports that more than average gains in reading for low achievers can be identified with instructional processes that are highly interactive (discussion/review, drill and practice, corrective feedback) in nature. Consequently, availability for instruction (attendance) must be supplemented by an intensive examination of instructional processes. Thus, a child who is a poor attender may realize a larger gain in achievement based upon the quality of instruction as opposed to simply being available for instruction; this, in fact, we feel is what is being revealed by the low correlations reported herein, inspite of overall average achievement gains reported in the 1978-79 district Title I evaluation report (Schoenenberger and Tompkins, 1979) for both programs across the grades studied.

A second concern is the actual length of the remediation program relative to diminishing returns in achievement. The current program in Des Moines (and typical of many school districts) is of a school year's duration. Children are pretested in the fall (beginning of the first semester) and posttested in the spring (end of the second semester) and their achievement gains recorded for purposes of program evaluation. Consequently, is this gain realized at the end of the program year or is it possible that the gain occurred at the end of the first semester and remained at that level during the second semester of remediation? If a

student is found to need only one semester of remediation followed by careful monitoring and reinforcement activities on behalf of the regular classroom teacher, the program could potentially allow more students to be served (for the same dollar amount) on a yearly basis as well as utilizing the expertise of program personnel more effectively. In either case we are not aware of studies being undertaken in these areas that could lead to a clearer picture of achievement as opposed to the masking effects created by the proxy measure of attendance.

NOTES

1. Federal legislation for Title I programs is designed to provide financial assistance to local education agencies to expand or improve upon a variety of educational programs (e.g., mathematics, reading) for identified educationally deprived children. The legislation is specific in the sense that it was initiated to provide financial assistance for educational agencies to provide supplemental remedial programs (i.e., in addition to existing local educational programs) and not supplant these activites. Thus eligible recipients are to receive the benefit of both regular classroom instruction in addition to the benefits of the appropriate remedial program.
2. Over seventy studies were located as a result of an extensive literature search but none of these concentrated specifically upon an explicit examination of the relationship of attendance and Title I program achievement. In addition, Title I Technical Assistance Center personnel at the Northwest Regional Educational Laboratory and the American Institutes of Educational Research were unable to locate extant studies or projects pertaining to this investigation.
3. Attendance Rate Logit = LN (attendance rate/1-attendance rate)

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